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10/527,797	03/15/2005	Hiroyuki Tomizawa	743421-81	7499

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EXAMINER	
SHEEHAN, JOHN P	

ART UNIT	PAPER NUMBER
1793	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/527,797	TOMIZAWA ET AL.	
	Examiner	Art Unit	
	John P. Sheehan	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 December 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,4 and 5* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4 and 5* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Interpretation

1. Product claims 1 and 2 recite the transitional term, "comprising' (e.g. claim 1, line 2) which is open terminology that leaves the claim open to any unrecited elements even in major amounts. Product claims 1, 2 and 4 have been interpreted accordingly.

2. In like manner, process claim 5 recites the transitional term, "comprising' (e.g. claim 5, lines 2 and 3) which is open terminology that leaves the claim open to any unrecited process steps. Process claims 5 and 6 have been interpreted accordingly.

> The transitional term "comprising ",which is syn - onymous with "including," "containing," or "charac - terized by," is inclusive or open--ended and does not exclude additional,unrecited elements or method steps.See,e.g.,*Genentech,Inc.v.Chiron Corp .*, 112 F.3d 495,501,42 USPQ2d 1608,1613 (Fed.Cir. 1997)("Comprising "is a term of art used in claim language which means that the named elements are essential,but other elements may be added and still form a construct within the scope of the claim.); *Moleculon Research Corp.v.CBS,Inc.*,793 F.2d 1261,229 USPQ 805 (Fed.Cir.1986);*In re Baxter* , 656 F.2d 679,686,210 USPQ 795,803 (CCPA 1981); *Ex parte Davis* ,80 USPQ 448,450 (Bd.App.1948) ("comprising " leaves "the claim open for the inclu - sion of unspecified ingredients even in major amounts "). See MPEP 2111.03.

3. Claim 4 recites, "an oxygen concentration of at most 0.5 mass%, a nitrogen concentration of at most 0.2 mass%, and a hydrogen concentration of at most 0.01 mass%" (emphasis added by the Examiner). The term, "at most" describes the upper

limit of the recited component, however no lower limit is claimed. Therefore this claim language is considered to encompass 0 mass%. Thus, claim 4 has been interpreted to not necessarily require the presence of oxygen, nitrogen or hydrogen.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

I. In claim 5, line 8, "the melt lacks a clear antecedent.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1, 2 and 4 are rejected under 35 U.S.C. 103(a) as obvious over Uchida et al. (Uchida '365, US Patent No. 6,468,365, cited in the IDS submitted March 15, 2005).

Uchida '365 teaches a R-T-B sintered magnets having a composition that overlaps the sintered R-T-B magnet composition recited in applicants' claims (column 3, lines 54 to 62). Further, Uchida '365 teaches that 0.01 to 0.3 wt% gallium (Ga) drastically improves the iHc (coercivity) of the R-T-B sintered magnet (column 4, line 66 to column 5, line 5). Thus, the following comparison of Uchida '365 disclosed composition and applicants' claimed composition demonstrates that the two compositions overlap.

Element	Uchida '365	Applicants' Claims
Rare Earth	28 to 33 wt%	27.0 to 32.0 wt%
Boron	0.5 to 2 wt%	0.90 to 0.96 wt%
Ga	0.01 to 0.3 wt%	0.01 to 0.08 wt%
Fe or (Fe+Co)	Balance	63.0 to 72.5 wt%

Uchida '365 also teaches specific examples of R-T-B sintered magnets having compositions that, with the exception of the boron content, are encompassed by the R-T-B sintered magnet composition recited in applicants' claims 1, 2 and 4 (column 12, lines 17 to 25; column 13, lines 16 to 25; and column 14, lines 30 to 37). Each of Uchida '365's examples cited by the Examiner contains 0.97 wt% boron whereas the instant claims recite an upper boron content of 0.96 wt%. Thus, the instantly claimed boron content and the exemplified boron content taught by Uchida '365 closely approximate each other. Uchida '365 also teaches a process that is substantially the same as applicants' disclosed process of making the instantly claimed R-T-B sintered

magnets (for example compare applicants' disclosed process to each of column 12, lines 3 to 16; column 14, lines 10 to 20 and column 14, lines 16 to 25). Uchida '365's disclosed process includes a post sintering heat treatment at 500^0C which is encompassed by the post sintering heat treatment step at 400^0C to 600^0C disclosed by applicants

The claims and Uchida '365 differ in that Uchida '365 does not teach the exact same proportions as recited in the instant claims and Uchida '365 is silent with respect to the relative proportions of the $R_2T_{14}B$ and $R_{1.1}Fe_4B_4$ phases as recited in claim 1.

However, one of ordinary skill in the art at the time the invention was made would have considered the invention to have been obvious because the proportions taught by Uchida '365 overlap the instantly claimed proportions and therefore are considered to establish a prima facie case of obviousness. It would have been obvious to one of ordinary skill in the art to select any portion of the disclosed ranges including the instantly claimed ranges from the ranges disclosed in the prior art reference, particularly in view of the fact that;

> "The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages", In re Peterson 65 USPQ2d 1379 (CAFC 2003).

Also, In re Geisler 43 USPQ2d 1365 (Fed. Cir. 1997); In re Woodruff, 16 USPQ2d 1934 (CCPA 1976); In re Malagari, 182 USPQ 549, 553 (CCPA 1974) and MPEP 2144.05.

Further, in view of the fact that the composition of Uchida '365's R-T-B sintered magnets overlap the composition of the instantly claimed R-T-B sintered magnets and

are made by a process which is similar to, if not the same as, applicants' process of making the instantly claimed R-T-B sintered magnets, Uchida '365's R-T-B sintered magnets would be expected to posses all the same properties as recited in the instant claims, In re Best, 195 USPQ, 430 and MPEP 2112.01.

> "Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established, In re Best, 195 USPQ 430, 433 (CCPA 1977). 'When the PTO shows a sound basis for believing that the products of the applicant and the prior art are the same, the applicant has the burden of showing that they are not.' In re Spada,15 USPQ2d 655, 1658 (Fed. Cir. 1990). Therefore, the prima facie case can be rebutted by evidence showing that the prior art products do not necessarily possess the characteristics of the claimed product. In re Best,195 USPQ 430, 433 (CCPA 1977)." see MPEP 2112.01.

Further, because Uchida '365's specific examples, cited above, contain 0.97 wt% gallium which closely approximates the instantly claimed upper limit of 0.96 wt% gallium, one of ordinary skill in the art would have expected the specific examples of R-T-B sintered magnets taught by Uchida '365 to have the same properties. *See in re Peterson,* 65 USPQ2d 1379, 1382, citing *Titanium Metals Corp. v. Banner*, 227 USPQ 773, 779 and MPEP 2144.05.

> "a *prima facie* case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties. *Titanium Metals Corp.of America v.Banner* ,778 F.2d 775, 227 USPQ 773 (Fed.Cir.1985)(Court held as proper a rejection of a claim directed to an alloy of "having 0.8%nickel,0.3%molybdenum,up to 0.1%iron,bal ance titanium " as obvious over a reference disclosing alloys of 0.75%nickel,0.25%molybdenum,balance titanium and 0.94%nickel,0.31%molybdenum,bal

ance titanium.).

8. Claim 5 is rejected under 35 U.S.C. 103(a) as obvious over Uchida et al. (Uchida '365, US Patent No. 6,468,365, cited in the IDS submitted March 15, 2005) as applied to claims 1, 2 and 4 above, and further in view of Li (US Patent No. 6,527,874).

Uchida '365 teaches and is applied as set forth above. Uchida '365 further teaches a process that, with the exception of the strip casting step, is encompassed by claim 5 (column 12, lines 3 to 16; column 14, lines 10 to 20 and column 14, lines 16 to 25). It is noted that Uchida '365 is not limited to any particular method of casting the R-T-B alloys. The process taught by each of the examples includes two heat treatments after sintering, a first heat treatment at 900^0C and a second heat treatment at 500^0C. Uchida '365's second heat treatment at 500^0C step is encompassed by the post sintering heat treatment step at 400^0C to 600^0C recited in applicants' process claim 5 (claim 5, the last line).

Li teaches that strip casting improves the magnetic properties of R-T-B alloys (for example, see Figures 1 and 2 and column 3, lines 17 to 24).

Uchida '365 and claim 5 differ in that Uchida '365 is silent with respect to the specific method of casting the R-T-B alloys.

However, one of ordinary skill in the art at the time the invention was made would have been motivated to strip cast Uchida '365's R-T-B alloys so as to improve the magnetic properties of the R-T-B alloys as taught by Li.

Response to Arguments

9. Applicant's arguments filed December 1, 2009 have been fully considered but they are not persuasive.

10. Applicants, relying on articles A1 and A2 submitted with their response, argue that there prior to applicants' invention there was no recognition that low concentrations of B such as 0.90 to 0.96 mass% as recited in the instant claims could be employed since it was known that such low concentrations of B would degrade the magnetic properties. The Examiner is not persuaded. Applicants state that article A1 shows that magnetically soft $Fe_{17}Nd_2$ drastically decreases the coercivity of material. In making this statement applicants have not cited any section of article A1 which discloses that $Fe_{17}Nd_2$ decreases coercivity nor have applicants explained what the nexus is between this statement and the amount of B used in the magnet. Neither of the articles cited by applicants is directed to a rare earth-iron-boron magnet further containing Ga. On the other hand, Uchida '365, the prior art used in the rejection, clearly teaches 0.5 to 2 wt% of B in combination with 0.01 to 0.3 wt% Ga which each encompass the ranges recited in applicants' claims.

11. Applicants' argument that Uchida '365 odes not teach "that the addition of the small amount of Ga will change the behavior of the conventional magnet comprising no Ga" is not persuasive. Contrary to applicants' argument Uchida '365 teaches that;

> "the addition of a trace amount of Ga serves to drastically improve iHc of the R-T-B sintered magnet" (column 4, lines 66 to 67, emphasis added by the Examiner)

12. Applicants' argument that Uchida '365 does not provide any motivation to decrease the boron concentration below 0.97 wt% is not persuasive. It is pointed out that Uchida '365 teaches a B content of 0.5 to 2 wt% which encompasses applicants' claimed range of 0.9 to 0.96 wt%. As set forth in the statement of the rejection, it would have been obvious to one of ordinary skill in the art to select any portion of the disclosed ranges including the instantly claimed ranges from the ranges disclosed in the prior art reference, particularly in view of the fact that;

> "The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages", In re Peterson 65 USPQ2d 1379 (CAFC 2003).

Further, because Uchida '365's specific examples, cited above, contain 0.97 wt% boron which closely approximates the instantly claimed upper limit of 0.96 wt% boron, one of ordinary skill in the art would have expected the specific examples of R-T-B sintered magnets taught by Uchida '365 to have the same properties. *See in re Peterson,* 65 USPQ2d 1379, 1382, citing *Titanium Metals Corp. v. Banner*, 227 USPQ 773, 779 and MPEP 2144.05.

> "a *prima facie* case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties.*Titanium Metals Corp.of America v.Banner* ,778 F.2d 775, 227 USPQ 773 (Fed.Cir.1985)(Court held as proper a rejection of a claim directed to an alloy of "having 0.8%nickel,0.3%molybdenum,up to 0.1%iron,balance titanium " as obvious over a reference disclosing alloys of 0.75%nickel,0.25%molybdenum,balance titanium and 0.94%nickel,0.31%molybdenum,balance titanium.).

In making their argument applicants appear to implying that there is a critical difference between the B content of 0.97 wt% exemplified by Uchida '365 and the instantly claimed upper limit of 0.96 wt%. However, applicants have presented no evidence in support of this position.

13. Applicants argument "that one of ordinary skill in the art would not modify Uchida to provide for adjusting the behavior of the conventional magnet, as claimed since doing so would change the principle operation of Uchida" is not persuasive. The rejection is not based on any modification of Uchida '365 but rather is based on practicing Uchida '365's invention within the limits disclosed by Uchida '365. Further, applicants have not explained how practicing Uchida '365's invention within Uchida '365's disclosed limits would change the principle operation of Uchida invention.

14. Applicants, relying on Figure 1 of the specification, argue that the claimed ranges recited in the instant claims yield unexpected results otherwise not realized by those of ordinary skill in the art. Applicants explain that Figure 1 shows that the coercivity of the sintered and heat treated sample including 0.96 % boron and 0.02 % of Ga had a much higher coercivity than the sintered but not heat treated including 0.96 % boron and 0.02 % of Ga. In making their comparison applicants are comparing a sintered and heat treated sample to a sintered but not heat treated sample. However, Uchida '365 teaches that a post sintering heat treatment. Thus, Ichida teaches a sintered and heat treated product. In view of this, applicants' comparison does not compare the claimed invention to the closest prior art, Uchida '364, which teaches a sintered and heat treated product.

15. Applicants also argue that Figure 1 shows that coercivity of a sample containing no Ga is much lower than the sample containing Ga. This is not persuasive in that Uchida '365 teaches and exemplifies the use of Ga (column 4, line 66 to column 5, line 5; column 12, lines 17 to 25; column 13, lines 16 to 25; and column 14, lines 30 to 37). Further, Uchida '365 explicitly teaches that "the addition of a trace amount of Ga serves to drastically improve iHc" (column 4, lines 66 to 67) and teaches a Ga range of o.o1 to o.3 wt% (column 5, lines 1 to 5).

16. Further, it is the Examiner's position that the data in applicants' Figure 1 indicates that there is little difference in the magnetic properties between a Ga containing alloy containing 0.96% B as recited in the instant claims and a Ga containing alloy containing 0.97 % B as specifically exemplified in Uchida '365. Actually, in some cases the Ga containing alloy containing 0.97% B as taught by Uchida '365 has better properties than the applicants' Ga containing alloy containing 0.96 % B, for example, see the intrinsic coercivity for the as sintered embodiment and the heat treated at 773 ^{0}K embodiment.

17. Applicants' argument with respect to claim 5 that Figure 1 demonstrates that the heat treatment recited in claim 5 drastically increases the intrinsic coercivity is not persuasive. Figure 1 indicates that the heat treated Ga containing alloy containing 0.97% B as taught by Uchida '365 has better intrinsic coercivity than the applicants' heat treated Ga containing alloy containing 0.96 % B, for example, see the intrinsic coercivity for the as sintered embodiment and the heat treated at 773 K embodiment.

18. Applicants argue that, "Without the teachings of the present invention, the boron concentration would otherwise be set to be more than 0.96 mass%, Uchida simply fails

to teach or suggest that the boron concentration can be less than 0.97 mass%". The examiner is not persuaded. Uchida '365 teaches a boron content of 0.5 to 2 wt% (for example, see Uchida '365, the Abstract; column 3, line 56 and column 4, lines 21 to 24). Thus, in view of the fact that Uchida '365 teaches a B content of as low as 0.5 wt%, Uchida '365 disclosure is considered to teach and suggest a B content which encompasses values of less than 0.96 wt%.

19. Applicants argue the that the Examiner has failed to establish a prima facie case of obviousness for at least 4 reasons. Applicants argue that the Examiner has not:

I. "demonstrated how Uchida whether taken alone of in combination, discloses or suggests each and every feature of the claims. See M.P.E.P. 2143".

II. "shown any reasonable probability of the existence of success in modifying Uchida...in a manner that could somehow result in the claimed invention. See id"

III. "identified any suggestion or motivation, either in the teachings of the applied references themselves or in the knowledge generally available to one of ordinary skill in the art to modify Uchida in a manner that could somehow result in the claimed invention. see id."

IV. "explained how his obviousness rationale could be found in the prior art --- rather than being hindsight reconstruction of Applicants' own disclosure. See id."

V. "the Examiner has failed to satisfy the his burden of demonstrating how Uchida, taken alone of in combination, can either anticipated or render obvious each

and every of the limitations present in independent claims 1 and 5, as required by the M.P.E.P. and the Federal Circuit jurisprudence" (applicants' response, page 9)
It is the Examiner's position that the statement of the rejections set forth above meet the requirements of a properly formulated rejection under 35 USC 103. Further, in making this argument applicants have not specifically pointed out and explained how the Examiner's formulation of the rejection does not fulfill the requirements I to V listed by applicants.

Conclusion

20. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

21. Any inquiry concerning this communication or earlier communications from the examiner should be directed to John P. Sheehan whose telephone number is (571)

272-1249. The examiner can normally be reached on T-F (7:30-5:00) Second Monday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/John P. Sheehan/
Primary Examiner
Art Unit 1793

JPS